

GOLF BALL MARKING SYSTEM

This application claims priority pursuant to 35 U.S.C. §119 based on U.S. Provisional Application Serial No. 60/421,749 filed October 28, 2002, and U.S. Provisional Application Serial No. 60/476,792 filed June 6, 2003, the entire
5 disclosures of which are hereby incorporated by reference.

This invention relates to golf. More particularly, this invention relates to a system for marking golf balls and/or putters so as to help a golfer align putts in a particular direction, and then determine whether the ball was struck properly (initially rolled in that direction) when it was putted.

Background of the Invention

Golfers continuously struggle to improve the quality of their putting. Innumerable putters have been designed over the years to improve putting accuracy. Many different training aids have also been designed with a view toward improving the putting stroke and/or the golfer's alignment.

15 Accurate putting depends in the first place on the putter's skill in "reading" a green. That is, the putter must calculate the extent, if any, to which a ball will curve when struck, the speed of the green, and the force that must be applied to the ball to reach the hole. Even if the golfer has accurately "read" the green and aimed his or her

ball and putter accurately along the proper initial starting line, it is necessary that the ball be struck squarely (with a square strike) so that it starts rolling in that proper direction at the proper speed, for good putting. Small errors in alignment between 1) the face of the putter and ball at impact, 2) the direction of motion of the putter relative to the proper starting line, or 3) the impact point relative to the location of the center of mass or percussion center of the putter, will cause the struck ball to rotate (spin sideways), and to initially move away from the desired path. Said another way, if any of the above mentioned three errors cause, or combine to cause the putter face to not deliver a "square-strike" to the ball, then side spin is initially imparted to the ball and the ball will veer from the proper path in one direction or the other depending on the direction and magnitude of the stroke error(s).

The object of this invention is to provide an improved marking system for golf balls whereby the golfer can determine immediately whether or not the ball has been struck properly along the direction it was aimed and, if not, to enable the golfer to assess the extent to which the ball has been mis-stroked.

Summary of the Invention

In accordance with the invention, a golf ball is marked by placing two highly visible circumferential o-rings (circular stripes) around the ball close to the equator of the ball, and two markings on the polar regions of the ball. The polar markings are almost invisible to the golfer who is putting the ball when the ball is properly aligned with its intended starting line. The o-rings are precisely parallel to each other and

capable of being aligned parallel to the desired direction of initial motion of the putt. If the ball is struck improperly (in any way other than with a precisely "square-strike"), the circumferential o-rings (stripes) will then appear to wobble as the putt rolls (due to initial side spin imparted by the non-square strike), and the rotating polar markings will become more visible to the golfer (pulsating into and out of the golfer's view), with the extent of their visibility indicating the extent to which the ball was improperly struck.

A putter in accordance with the invention includes a central region (top tray) on its upper surface which contains two lines that converge from back to front. At the forward face of the putter these two lines align precisely with the equatorial o-rings on the ball. The outside edges of such top tray converge into alignment with the outside white edges of the ball to be puttied (and in the golfer's mind, with the ball's outside two polar markings, although the polar markings are not readily visible to the golfer), and run over the front top line of the putter and down along the putter face, to connect most closely to the ball. In accordance with a further feature of the invention, the upper top tray surface of the putter has the same color and dimpled configuration of a conventional golf ball, with the remaining upper surfaces of the putter colored to imitate (and disappear from the golfer's attention into the) grass.

The Drawings

Figure 1 is a perspective view of a golf ball marked in accordance with a preferred embodiment of the invention;

Figure 2A is a perspective view of a golf ball marked in accordance with a second embodiment of the invention;

Figure 2B and 2C are views face-on to the polar regions of a golf ball marked in accordance with the second embodiment of the invention;

5 Figure 3 is an illustration showing how the markings appear when a ball marked in accordance with the preferred embodiment of the invention) rolls after being struck properly;

Figure 4 is an illustration showing how the markings appear when the ball shown in Figure 3 is struck improperly, with sidespin imparted to the ball at impact;

10 Figures 5A, 5B and 5C are top perspective views of different putter constructions showing how a putter can be marked to enhance alignment of the putter and ball marked as shown in Figures 1 or 2;

Figures 5D, 5E and 5F are side cross sectional views of the putters shown in Figs. 5A, 5B and 5C, respectively, showing the top tray inserts; and

15 Figures 6A and 6B are top plan views of ball markers containing alignment markings in accordance with another feature of the invention;

Detailed Description

In the specification and claims, the terms “equator” and “polar regions” are used to define relative positions on a golf ball. The “equator” as its name implies, is

the circumference of the ball at its midpoint, i.e., its largest diameter, or a great circle. The "polar regions" refer to the regions of the ball which lie on and around the intersection of the ball and an axis of the ball perpendicular to the plane in which the equator lies.

5 The principles of the invention are explained with respect to Figures 1 and 2 which illustrate a golf ball marked in accordance with two embodiments of the invention.

10 In Figure 1 a golf ball 8 includes two closely spaced equatorial o-rings (circumferential stripes) 10 and 12 equally offset from an equator of the ball. In accordance with this embodiment of the invention, a marking in the shape of a circle or polar o-ring 14 is printed in each polar region of the golf ball (only one circle 14 is shown in Figure 1). The polar o-rings 14 are essentially invisible to a golfer when positioned to putt, with his or her eyes vertically above the line along which the equatorial o-rings are aligned.

15 In the embodiment illustrated in Figure 2A, 2B and 2C, two equatorial o-rings (circumferential stripes) 10 and 12 as shown in Figure 1 are also included, but in this case each polar region is marked with a pair of lobes 16 and 18. Each lobe may be circular although the shape is not critical. The lobes on one pole are offset by 90° from the lobes on the other pole.

When a golfer addresses a putt, his or her eyes are directly over the ball which means that if the ball is correctly aligned before the putting stroke, the golfer sees the two equatorial o-rings clearly as they cross the upper surface of the ball, but almost none of the two polar o-rings, which appear only at the outer edges of the ball. The golfer's eyes from this position are also in an ideal position to observe the rotation of the markings, as the ball rolls along the green after being putted. Surface friction eliminates side spin from putts shortly after impact, so the amount of side-spin (or turn) imparted to a ball at impact determines how much of the polar o-rings become periodically visible to the golfer, as the putt rolls. The equatorial o-rings (circumferential stripes) 10 and 12 on the ball enable the golfer to align the ball with a precise direction (anticipated initial path). The golfer can then ascertain whether the ball was properly or improperly struck by his or her putting stroke, by watching the roll of the ball along the green. During this roll, the apparent wobble shown by the equatorial o-rings, and the extent of appearance (or non-appearance) of the polar markings, as explained below, provide a quantitative indication of the quality of the putting stroke.

With the balls marked as shown in Figures 1 and 2, when the ball is struck perfectly, no side spin is imparted to the ball at impact and the golfer observes a putt roll in which no wobble appears in the equatorial o-rings, and the polar o-rings or lobe markings stay essentially invisible. This is illustrated in Figure 3. If the ball is improperly struck, causing side spin to be imparted to the ball at impact, the lines formed by the equatorial o-rings (stripes 10 and 12) appear to wobble from side to

side, and the polar o-rings (or lobe markings) make periodic appearances on opposite sides of the ball, greatly magnifying the appearance of wobble as the ball rolls (see Fig. 4). The greater the side spin imparted to the ball, the greater the apparent amplitude of the wobble.

5 An important advantage of the balls marked as shown in Figures 1 and 2 is that the visual effect created by the polar markings provides a quantitative indication of how much side spin was imparted to the ball by the putter (e.g. of how bad the stroke was). As balls containing polar markings rotate, the visual dominance of the pole markings increases proportionately to the amount of initial side spin imparted to
10 the ball at impact. This indicates to the golfer how much side spin his or her stroke imparted to the putt. The greater the side spin, the more obvious the wobble. A perfect putt will exhibit no wobble as the polar markings stay essentially invisible to the golfer.

 There are numerous ways in which a ball can be marked both
15 circumferentially and in the polar regions, to provide the evaluation of stroke quality feedback benefits to golfers sought by the invention. The individual markings can be any desired pattern, including letters, and may include different colors, solid or cross hatched areas, or other visual indicia which enable the golfer to assess the quality of his/her putting stroke based on the appearance or non-appearance of apparent wobble
20 in the roll of the ball after it has been struck. Obviously, the markings of this invention do not make balls actually wobble. The orientation of the markings relative

to the initially intended putt line produces only the appearance of wobble, when balls are turned or spun sideways by putter impact.

Figures 5A, 5B and 5C are top perspective views of three putters designed for use with the ball shown in Figures 1 and 2. The putters may be cast from any suitable material (e.g. stainless steel) and include an opening for receiving a shaft 19. A
5 recessed top tray 20 is provided in the central region of each putter between two lateral sections 21 and 23. Two marking lines 22 and 24 are printed on the upper surface of top tray 20 and converge from the back of the putter to the front (face), with the distance between the lines 22 and 24 at the putter face corresponding to the distance between the central o-rings 10 and 12 on the ball. The top tray 20 rises from
10 the back of the putter to the front (face) and, preferably, is horizontal for a distance of at least about 0.4 inches from the face of the putter (referred to as the "top line"), sloping gradually downward to the back of the putter. Preferably, the width of the tray converges towards the face of the putter with the width of the tray at the face
15 corresponding to the distance between the polar o-rings 14 of the ball (Fig. 1). The top tray region 20 of each putter simulates a golf ball cover and the remaining portions of the putter head which are visible to the golfer are camouflaged to look like grass. This can be done by the application of spattered grass-like colors to the upper surfaces of the sections 21 and 23. The top tray 20 may be covered with the same
20 material which is used to cover a golf ball, i.e., a white dimpled material. The top tray 20 preferably comprises a separate insert (e.g. made of urethane) which is cemented into a suitable recess in the putter and serves as the hitting surface of the putter face.

In this way the top tray material flows contiguously over the front top line of the putter and is in close proximity to the ball during alignment of the putter. The hitting (vertical) surface of the top tray is not dimpled but the upper surface which is visible to the golf is dimpled in the same way as a typical golf ball.

5 The cross-sectional shapes of inserts that may serve as the top trays 20 used in the putters of Figs. 5A, 5B and 5C are shown in Figs. 5D, 5E and 5F, respectively. As shown each tray 20 may include a slot 27 which engages a complementary locking bar 29 in the putter head.

10 Because of the identity of the putter and ball surfaces, the continuous flow of white surface material from the back of the putter over the top front line and down the putter face (making the ball and converging white putter surface look almost contiguous), and the ability to match the convergent marking lines 22 and 24 on the putter with the lines 12 and 14 on the ball, a golfer can position the putter in the proper orientation with respect to the ball with less difficulty and greater accuracy
15 than previously possible.

 Single lines on a putter have been used in the past to assist in the alignment of a ball and putter, but converging lines such as the lines 22 and 24 have been found by testing to enhance the golfer's ability to align the putter with the ball.

 A still further feature of the invention is illustrated in Figures 6A and 6B
20 which show two different versions of a ball maker in accordance with the invention.

Ball markers are used by golfers to mark the position of a ball on a putting green if the ball is to be removed from the green for any reason. Both of the ball markers illustrated in Figs. 6A and 6B can also be made of (or covered with) dimpled, white, material which exactly matches the appearance of the surface of the golf ball. Each of the markers includes converging lines 40 and 42 which are adapted to be aligned with the lines 10 and 12 on the ball. The marker of Figure 6B includes curved lines 44 which can be aligned with the polar O-rings 14 on the ball illustrated in Figure 1.

The markers can be used to assist in aligning the golf ball along a desired path on the green. Once the golfer has determined the path on which he or she thinks the ball should start rolling, the marker is carefully positioned so that the converging lines 40 and 42 are precisely aligned with that path. The ball is then re-placed in front of the marker so that the lines 10 and 12 on the ball are aligned with the lines on the marker. When the marker is removed, from the viewer's perspective above the ball, the equatorial o-rings on the ball should be directed exactly along the desired starting line of the putt. Thereafter, a putter marked as shown in Figs. 5A, 5B or 5C, can be aligned with the ball to enable a proper stroke. After the ball has been struck, the lines on the ball can be viewed as described above to determine how well, or how poorly, the putt was struck.